

S.C.

Notice of Allowability	Application No.	Applicant(s)	
	10/731,788	FUKUHARA ET AL.	
	Examiner	Art Unit	
	Tatyana Zalukaeva	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/08/2003.
2. ☒ The allowed claim(s) is/are 1-4.
3. ☒ The drawings filed on 08 December 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>03/19/2004</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S COMMENT/REASONS FOR ALLOWANCE

Examiner's Comment

- Applicants' amendment filed in response to the telephone interview with the Examiner of record has overcome potential rejection of claim 4, as will be discussed below. Claims 1-3 were indicated as allowable.

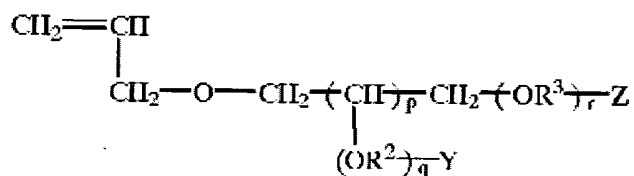
Allowable Claims

- Claims 1-4 are allowed over the prior art of record.

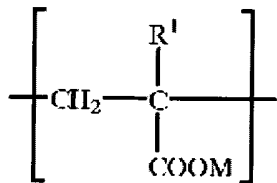
Reasons for Allowance

- The following is an examiner's statement of reasons for allowance: The closest prior art of record is Yamaguchi et al (U.S. 6,451,952).

Yamaguchi discloses the copolymer of allyl ether based monomer of the general formula



(abstract) with methacrylic acid based comonomer of the general formula



(see col.4, lines 55-65), wherein the ratio between the "constitutional units" of copolymers is described in col.4, lines 10-27, and is within the range of the instant claim 1.

However, Yamaguchi teaches that no phosphorus or very little phosphorus is present in the polymer. There is no indication or suggestion in Yamaguchi that the phosphorus is in the main chain in the amount defined by the instant claims, and since the structure of polymers is different, the gelation resistance, the calcium ion bonding ability and the weight of bonded phosphorus atoms are unique for the claimed composition.

With regard to the method claim 4, the closest prior art of record is JP 62-214186.

JP'186 discloses a process for polymerizing a mixture composed of a specific unsaturated carboxylic acid monomer and sulfonic acid group- and/or hydroxyl group-containing monomer in the presence of a specific ratio of a hypophosphoric acid or hypophosphite. The monomer mixture composed of 90-40mol% unsaturated carboxylic acid monomer and 10-60mol% sulfonic acid group- and/or hydroxyl group-containing monomer is prepared. The monomer mixture is polymerized in the presence of the hypophosphoric acid or hypophosphite at 0.01-0.3mol ratio per mol of the monomer mixture to prepare a copolymer having 5-100 degree of polymn. Such copolymer is used as the essential component of the corrosion preventive agent for metals.

However, JP'186 does not teach or suggest copolymerization of acrylic acid based monomer with (meth)allyl ether monomer, as required by the instant claim 4, nor does JP'186 teach or suggest that the hypophosphorous acid is added before the

polymerization initiator. As shown by the instant disclosure, such addition of components (hypophosphorous acid is added before the polymerization initiator) results in unexpected properties of a polymer, polymerization system, then it is possible to Effectively introduce the phosphorus atom into the main chain of the (methlacrylic copolymer and further to easily obtain a low-molecular-weight copolymer. In the case where a portion of the hypophosphorous acid (salt) is initially charged, see comparative Examples 1, 2, pages 21-23. See also table 1 that shows the process of the instant claims allows to reach higher calcium ions binding capacity without sacrificing a gelation resistance.

Other prior art of record alone or in combination does not teach or suggest all the limitations of the instant claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (571) 272-1115. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Application/Control Number: 10/731,788
Art Unit: 1713

Page 5

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tatyana Zalukaeva
Primary Examiner
Art Unit 1713

August 20, 2004

A handwritten signature in cursive script, appearing to read 'Zalukaeva', with a long horizontal flourish extending to the right.